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Conservation Systems Research

Evaluation of Black Oat, Clover, Lupin, and Selected Brassica Species on Weed Dynamics in Corn and Cotton

RESEARCH PROJECT DESCRIPTION NO. 33



Lupin

Researchers

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The Challenge

Historically, cover crop choice has been limited to cereal cover crops such as rye and wheat or legumes for use in cotton, corn, peanut, and soybean. Generally, a good cover crop includes the following qualities: 1) easy to establish, 2) easy to kill, 3) provides long residue persistence in the summer cropping system, and 4) doesn't negatively affect the crop by over-wintering pests or immobilizing nutrients. Winter cover has been shown to affect winter and summer annual weed populations. Cover crops and their residues inhibit

weed seed germination by intercepting sunlight needed for germination as well as modifying weed seed moisture and temperature. Also, some winter covers such as cereals and Brassica species have also been shown to possess allelopathic properties with activity against soil-borne plant pathogens and weed species. However, we know of no publications that recommend planting cover crops that target suppression of individual weed species or weed complexes. The challenge is to develop new cover crops that provide weed suppression in conservation tillage systems that may allow for reduction of preplant burndown and/or pre-emergence herbicides.

The Experiment

Black oat, Brassica species, clover, and lupin will be established winter covers preceding a cotton-corn rotation under conventional and conservation tillage systems. Weed dynamics within each combination of cover crop, crop, and tillage system will be evaluated. Evaluations will include weed species, density, and biomass as well as crop response reflected in biomass and yield.



Black oat

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